

**REMARKS**

In the office action mailed March 14, 2003, claims 1-21 were pending for consideration. Specifically, the Examiner took the following actions:

- 1) Claims 1 and 13-17 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,398,131 (hereinafter "Hall");
- 2) Claims 1, 8-11 and 13-16 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,679,138 (hereinafter "Bishop");
- 3) Claims 1, 2, 5, 6, 9, 10, and 12 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,779,777 (hereinafter "Okuda");
- 4) Claims 1-4, 7, 10, and 12 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,855,660 (hereinafter "Bujard");
- 5) Claims 13, 15, and 20 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,742,306 (hereinafter "Gompertz") in view of Bujard;
- 6) Claims 13, 15, and 21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Gompertz in view of U.S. Patent No. 5,570,205 (hereinafter "Sugita") and U.S. Patent No. 5,573,584 (hereinafter "Ostertag"); and
- 7) Claims 18 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bishop in view of U.S. Patent No. 6,338,545 (hereinafter "Sekiya").

**Rejections Under 35 U.S.C. § 102**

The Examiner has rejected claims 1-17 under 35 U.S.C. 102(b) over several references. It is well settled law that references cited for purposes of anticipation must contain each and every element of the claimed invention. The Applicant asserts that none of the cited references provides sufficient disclosure for maintaining a rejection based on anticipation of any of the pending claims.

The Hall Reference

The Examiner has rejected claims 1 and 13-17 as being anticipated by Hall. The Applicant respectfully submits that the rejected claims are patentable over the Hall reference for the reasons set forth below, and that the rejection should be withdrawn.

The Examiner states that Hall discloses right and left handed polarized color inks "which influence the direction of reflected light". This use of the term "direction" in making this rejection is irrelevant to the presently claimed invention. For example, the only uses of the term "direction" in Hall refer to the "direction and rate of twist" of the LC molecules (col. 3, lines 49-52), the "direction of the alignment layer" with respect to the LC layer (col. 10, lines 11-16), and the direction light passes through a polarization sensitive layer (col. 8, lines 15-19). None of the uses of the term "direction" are referring to any "directional dependence" of the light reflective properties of the inks. The term "direction" is not used in relation to the light reflective properties of the inks disclosed in Hall. Specifically, the inks printed in Hall are designed to produce color stereoscopic images. The inks of Hall are more appropriately characterized as having, in effect, "*polarization* dependent light reflective properties" as opposed to "*directionally* dependent light reflective properties" as required by the claims of the present invention. Thus, the light reflected from these inks will be either left-handed or right-handed polarized light which may be printed to produce a stereoscopic image which is viewed using special stereoscopic glasses. See col. 1, lines 15-30. As a result, these inks when printed on a surface have *polarization* dependent viewing properties. The Applicant's use of "directionally dependent" is clearly related to a physical spatial directional dependence rather than polarization.

In addition, Claim 1 is drawn toward a single "specialty ink-jet ink" wherein "a multi-colored reflected light is emittable in the presence of a light source." It is important to note that individual inks of Hall do not emit multi-colored light. Specifically, Hall discloses a family of LC inks where "two narrow band inks of each handedness are a minimum to create white and three inks of each handedness are required to obtain white and most reasonably saturated colors". See col. 5, lines 1-5. It is clear that when printed, the inks of Hall reflect specific colors which are desirable to produce full-color images. The resulting images are

standard full color stereoscopic images giving the impression of depth to the viewer. Further, the colors thus printed can be detected using light sensors to determine print conditions to print a particular picture (col. 7, lines 29-34). In contrast, the inks of the present invention exhibit multi-color reflective properties from a single ink. Such multi-color reflective properties would not be easily measured using such a sensor. Any multi-color properties obtained by Hall occur from printing multiple inks and not from a single ink as in the claimed invention.

As mentioned in a previous Response, viewing the inks of Hall from various directions will not affect the frequency of perceived light, nor will it affect which particulates will provide viewable reflected light when viewed from a given direction. In contrast, the present invention produces images which exhibit "directionally dependent light reflective properties." The specification uses this terminology synonymously with a property that reflects multi-colored light. See page 6, lines 14-15. Thus, as the viewing and/or light source angles change, reflected colors can change. Additionally, by changing the direction of the light source and/or the direction that one views the ink, the particulates that reflect light can change in intensity (or go from viewable reflected light to non-viewable reflected light). The Applicant submits that "directionally dependent light reflective properties" refers to a spatial directional dependence rather than polarization. Further, "a multi-colored reflected light" is a property of the claimed ink and not solely the result of a plurality of inks. Hall does not teach or suggest the use of components that provides these properties.

As the above-described properties are encompassed by the term "directionally dependent light reflective property" and "multi-colored reflected light" and as these properties are not taught or suggested by Hall, it is respectfully submitted that the claims before the Examiner present allowable subject matter over Hall. Reconsideration is respectfully requested.

The Bishop Reference

The Examiner has rejected claims 1, 8-11 and 13-16 as being anticipated by Bishop. The Applicant respectfully submits that the rejected claims are patentable over the Bishop reference for the reasons set forth below, and that the rejection should be withdrawn.

The Bishop reference is an inappropriate reference for anticipation as it does not disclose an ink having “directionally dependent light reflective properties” nor does it disclose an ink which emits “multi-colored light” for the same reasons as discussed in connection with Hall.

Further, Bishop teaches that by milling the pigment particles to a smaller size, improved stability and quality is achieved. See col. 9, lines 34-39. The Bishop reference states that the composition of the inks is identical to known inks, but that the milling process differs. See col. 9, lines 29-33. Further, the Bishop reference teaches that large particles of typical pigments are undesirable as they “contribute to light scattering” See col. 9, lines 43-45. Though typical pigments *per se* do not have directionally dependent light reflective properties as defined by the specification, it would appear that the Bishop reference teaches even further away from these properties, avoiding larger particles that contribute to light scattering. This being said, light scattering is distinct from “directionally dependent” reflective properties of the present invention. Specifically, at col. 9, lines 43-45, Bishop notes that such light scattering is the result of an “adversely broadened” spectral absorption band. This light scattering causes a loss of sharpness of color and is undesirable in obtaining a wide variety of bright colors. Thus, based on the type of pigment and the discussion in Bishop, there is no disclosure of a “directionally dependent” property of the pigment particulate, nor is there a suggestion that a change in viewing angle would affect the reflected colors.

In addition, the inks of Bishop are essentially standard ink pigments which, when printed, produce specific colors such as magenta, yellow, cyan, etc. In contrast, the particulates of the present invention exhibit multi-colored reflected light with “brilliant color property. See page 10, lines 20-21 of application. The claims of the present invention require that the ink emits “a multi-colored reflected light” which element is not disclosed or suggested by the cited reference. Therefore, as the Bishop reference fails to teach each and every element of the claimed invention, the rejection based thereon should be withdrawn.

The Okuda reference

The Examiner has rejected claims 1-2, 5-6, 9-10 and 12 as being anticipated by Okuda. The Applicant respectfully submits that the rejected claims are patentable over the Okuda reference for the reasons set forth below, and that the rejection should be withdrawn.

The Examiner states essentially that the claim element "ink-jettable" is without meaning and does not limit the structure of the ink-jet ink. On the contrary, such a limitation is very meaningful and limits the potential ink vehicles, ink viscosities, particulate sizes, and a variety of other properties. Those skilled in the art will recognize ink compositions and the properties of ink-jettable compositions which allow for feasible ink-jet printing. The Examiner indicates that the Applicant has asserted in the Specification that an ink is made ink-jettable merely by adjusting the nozzle dimensions. The Applicant does indicate at page 11, lines 12-14 that bore sizes can be adjusted to accommodate larger particles. However, this is a merely secondary consideration in preparing an ink-jettable composition. The Examiner is directed to page 2, lines 12-19 where a few considerations are mentioned such as deviation of ink droplets (on a substrate), smear resistance after drying to water and other solvents, long term storage stability (e.g. lack of particulates settling), and long term reliability (e.g. corrosion and clogging). Other considerations include viscosity (page 6, line 22 and page 14-16) and pH. The vast majority of primary considerations in formulation of ink-jettable inks are related to the ink composition. For example, ink-jet inks must be capable of flowing through microchannels within the ink cartridge. Additionally, the exit orifice of the ink-jet pen is generally less than 200 micrometers and most often about 60 micrometers or smaller. Thus, without proper formulation, particulates may tend to clog these microchannels and orifices. Additionally, particulates should not substantially settle in the ink cartridge over extended periods of non-use. Typically, ink-jet inks have relatively low viscosities in order to achieve such flow. Thus, the use of ink vehicles containing fluids such as water, alcohols, surfactant, and/or similar low viscosity fluids are typically used. Ultimately, the Applicant is not merely recognizing a new use of a previously known composition. In fact, the ink-jettable compositions claimed are themselves previously unknown and not disclosed as a composition in the cited art.

The Applicant asserts that the elements “ink-jet ink” and “ink-jettable” specifically exclude inks such as those of Okuda which are not required to be capable of being ink-jetted. In this case, Okuda teaches forming a “water-in-oil emulsion ink for stencil printing” having a pearlescent pigment therein. See col. 1, line 66 to col. 2, line 5. The stencil printing is accomplished by transferring a relatively thick layer (5 to 20 micrometers) of ink. See col. 1, lines 44-46. Further, the Okuda disclosure requires the presence of an oil phase in which the pearlescent pigment may be contained. See col. 2, lines 32-35. Stencil printing inks are not commonly known to be ink-jettable and are printed using very different techniques due to their differing properties.

The Applicant respectfully submits that the terms “ink-jet ink” and “ink-jettable” as understood by those skilled in the art and as used in the specification clearly limits the compositions of the claimed invention and do not merely refer to an intended use. Okuda does not disclose each and every element of the claimed invention. Accordingly, the Examiner is respectfully requested to withdraw the rejection based on Okuda.

The Bujard Reference

The Examiner has also rejected claims 1-4, 7, 10, and 12 as being anticipated by Bujard. The Applicant respectfully submits that the rejected claims are patentable over the Bujard reference for the reasons set forth below, and that the rejection should be withdrawn.

Bujard teaches using reflective particles having high goniochromaticity as a pigment in various compositions. Particulates disclosed can be similar to those used in the present invention. However, as in Okuda, the compositions in which it is used are not ink-jettable. Specifically, the pigment is disclosed as suitable for use in paints, such as automotive paints. See col. 2, line 45. Additionally, Bujard discloses that the pigment is “embedded in [a] high molecular weight organic material” such as various resins, oils, rubbers, polymers and other similar materials. See col. 9, lines 11-13; col. 9, lines 27-45. The Bujard reference is clearly drawn towards high molecular weight compositions including paints, lacquers, and similar high-molecular weight compositions. As there is no teaching of an ink-jettable composition, the Applicant respectfully requests that this rejection be withdrawn.

**Rejections Under 35 U.S.C. § 103**

The Examiner has rejected claims 13, 15, and 18-21 as being obvious in view of various combinations of references. The Applicant respectfully submits that the rejected claims are patentable over the cited reference for the reasons set forth below, and that the rejection should be withdrawn. A brief overview of applicable case law was provided in the previous response and it is not thought necessary to repeat such information here.

**The Gompertz Reference in view of Bujard**

The Examiner has rejected claims 13, 15, and 18-20 as being obvious over Gompertz in view of Bujard. The Gompertz reference merely teaches a system of ink-jet cartridges for producing high quality color images. See Abstract. Further, the section of Gompertz cited by the Examiner (col. 1, lines 55-64) does not suggest specialty inks such as those claimed. In fact, Gompertz suggests that research has focused on finding inks having improved clarity and contrast, waterfastness, and vivid color. These properties are descriptive of standard colored ink-jet inks and associated endeavors to improve production of typical color images. To emphasize this point, the Abstract of Gompertz refers to “full color cartridge carr[ying] full colorant concentrations of inks, while the imaging cartridge carries ink formulations having reduced colorant concentrations such as cyan and magenta”. The Gompertz invention is related to retrofitting an inkjet printing *mechanism* not the ink-jet cartridges. Even the passage in column 1, lines 55-64 merely states an obvious desire in the industry to improve color ink-jet ink properties. Gompertz lacks any suggestion to use ink-jet technologies with any ink compositions besides standard black and colored ink sets. In contrast, the present invention includes the use of a specialty ink-jet ink which includes “particulates having directionally dependent light reflective properties.” The claimed ink-jet inks are clearly not merely standard colored ink-jet inks.

In Bujard, there is no suggestion that the disclosed pigments may be used in conjunction with ink-jet applications. Further, as discussed above, the Bujard compositions are configured for use in high-molecular weight compositions such as automotive paints, lacquers, and resins which are clearly not ink-jettable. Such compositions are significantly different both in composition and application from that of the present invention.

There is no motivation found in Bujard to modify any of the disclosed compositions to arrive at the ink-jettable specialty ink of the present invention as claimed by the Applicant. Even assuming that such a combination were proper, the resulting product would be a high molecular weight lacquer or paint in an ink-jet cartridge which would not satisfy the “ink-jettable” limitation of the claimed invention. Thus, Gompertz and Bujard fail to teach each and every element of the Applicant’s present claims, and are not properly combinable as required to establish a *prima facie* case of obviousness. Therefore, the Applicant submits that the present rejection under 35 U.S.C. § 103 is improper, and respectfully requests that it be withdrawn.

The Gompertz reference in view of Sugita and Ostertag

The Examiner has rejected claims 13, 15, and 21 as being obvious over Gompertz in view of Sugita and Ostertag.

The Ostertag reference teaches an interference pigment for producing images which are not easily duplicated or forged. The examples in Ostertag clearly indicate compositions for use in offset printing. See col. 4, lines 46-48 and col. 5, lines 13-19. In contrast, the present invention utilizes ink-jet technology which requires special considerations in preparation of an ink-jettable composition, as discussed at length above. The Ostertag reference does not provide a suggestion or motivation to modify the compositions therein to arrive at the present invention. The mentioned motivation in Ostertag, i.e., at col. 1, lines 5-10, is merely a motivation to use the Ostertag invention as disclosed and does not lead one skilled in the art to look toward ink-jet technologies such as Gompertz.

The Sugita reference teaches a facsimile device having a sheet carrier path for original and recording documents. This reference does not disclose any additional elements of the claims of the present invention which would lead to a *prima facie* case of obviousness.

Thus, in summary, there is no teaching or suggestion in any of the cited references to guide or motivate one of ordinary skill in the art to arrive at the Applicant’s invention. Accordingly, the Applicant respectfully submits that the references also fail to identify each and every element of the claimed invention. As it is the Applicant’s belief that the Patent

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Office has not met its initial burden of making a *prima facie* case, the Applicant respectfully requests that the rejection be withdrawn.

**Conclusion**

In view of the foregoing, the Applicant believes that presently pending claims 1-21 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be resolved during a telephone interview, the Examiner is invited to telephone the undersigned attorney, or Brad Haymond at (541) 715-0159, so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025

Dated this 9th day of June, 2003.

Respectfully submitted,



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